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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,582	04/14/2004	Gilles Arnaud	0595-1003	6229

466 7590 03/15/2006

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EXAMINER

HOLZEN, STEPHEN A

ART UNIT PAPER NUMBER

3644

DATE MAILED: 03/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/823,582	Applicant(s) ARNAUD, GILLES	
	Examiner Stephen A. Holzen	Art Unit 3644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 2, 4 and 6 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 3, 5 and 7-21 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/25/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of the species in the reply filed on 12/28/2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 1-21 are pending
3. Claims 2, 4, 6 are withdrawn
4. Claims 1, 3, 5, 7-21 have been rejected.

Background of Airfoil Shape

5. An airfoil is the shape of a wing or blade as seen in cross-section. Airfoils are passed through air in order to provide either positive or negative lift. Subsonic-flight airfoils are characterized by a rounded leading edge, followed by a sharp trailing edge, and often with camber. The camber in aerospace engineering is the asymmetry between the top and the bottom curves of an airfoil. Cambered airfoils generate lift at positive, zero, or even small negative angle of attack, whereas a symmetric airfoil only has lift at positive angles of attack. The amount of lift generated by an airfoil depends on how much the flow is turned, which depends on the airfoil's shape. In general, the lift is a very complex function of the shape. Aerodynamicists model the shape effect by a lift coefficient, which is normally determined through wind tunnel testing.

The Glenn Research Center (www.grc.nasa.gov) illustrates the shape effects on lift on their website (please see: www.grc.nasa.gov/WWW/K-12/airplnae/shape.html).

The airfoil on the left is a symmetric airfoil; the shapes above and below the white centerline are the same. The example shown explains why the aft portion of wings have hinged sections to control and maneuver an aircraft. Deflecting the aft section down produces geometry similar to the figure on the right producing more lift. Similarly, if the aft section is deflected up, it creates less lift (or even negative lift). The ability to vary the amount of lift over a portion of the wing gives the pilot the ability to maneuver an aircraft. The main point that one takes away from reading the Glenn Research Center website is that wings and flaps can be designed to having a plurality of different shapes, and that an engineer will design an wing/flap to suit the purpose for which the wing/flap needs to serve.

6. As best understood, applicant's invention is drawn to a symmetrical airfoil (wing) having a symmetrical flap/slat/aileron (flap) forwardly hinged to the aft section of the symmetrical wing.

The applicant's claims rely heavily on the wing/flap dimensions and shapes.

Claim Rejections - 35 USC § 103

7. Claims 1, 3, 5, 7-17, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips (6,970,773) in view of Munoz Saiz (6,109,567). Phillips discloses in FIG. 1G how to determine flap ratio for a wing 80 having a flap 82. The

Art Unit: 3644

local chord length c is measured from the leading edge 84 to the trailing edge 86. The local flap chord length is measured from the front edge of the flap to the trailing edge 86. Figure 1F teaches that it is well known in the art to locate more than one flap on a single wing. Figure 1G further illustrates a symmetrical wing and a symmetrical flap. The wing has a leading edge that has an elliptical cross section and a clearance between the wing's trailing edge and the flap's leading edge. Neither the wing nor the flap has a concave shape. Phillips does not specifically disclose a rounded edged forwardly hinged flap and a clearance overhang. Saiz however teaches that it is well known in the art to hinge a symmetrical flap to the aft edge of the wing, to have an elliptical recess within the wing and to insert the elliptical leading edge of the flap into the recess (thus creating the clearance overhang). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the flap of Phillips as taught by Saiz for the purpose of degreasing overall wing/flap drag.

- a. Neither Saiz nor Phillips discloses the specific/exact dimension claimed by the applicant. However as discussed above, aeronautical engineers have for years modified the shape of the airfoils to alter the lift & drag of airfoils and flaps.
- b. It would have been obvious to one having ordinary skill in the art at the time the invention was made to design
 - i. design the wing and/or flap to have a first major axis to minor axis quotient not less than 1.5

Art Unit: 3644

- ii. design the wing and/or flap to have a main angle (α) = 20 degrees
- iii. design the wing and/or flap to have a second major axis to minor axis quotient approximately equal to 1.5
- iv. design the wing and/or flap to have a second major axis to minor axis quotient equal to 2
- v. situate the axis of rotation of the flap at a first distance from the first leading edge corresponding more or less to 25.5% of the Chord
- vi. to include the clearance between 1.5% and 3.% of the chord of the flap
- vii. to design the clearance such that it corresponds to approximately 2% of the flap chord
- viii. to design the clearing such that it is included between .4% and .8% of the total length separating a second leading edge from the first trailing edge
- ix. to design the clearance such that it corresponds to approximately 0.5% of the total length
- x. to design the partial overlap of the first leading edge and the second trailing edge such that it is located less than 10% of the cord of the flap.
- xi. to design each of the flap such that they are less than or equal to 15% of the second span distance and

Art Unit: 3644

- xii. to design the first span of each flap such that it is included between 7% and 10% of said second span of said lifting surface

since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boeson*, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980)

The rationale to modify or combine the prior art does not have to be expressly stated in the prior art; the rationale may be expressly or impliedly contained in the prior art or it may be reasoned from knowledge generally available to one of ordinary skill in the art, established scientific principles, or legal precedent established by prior case law. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). See also *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000)

In re Rose, 220 F.2d 459, 105 USPQ 237 (CCPA 1955) (relating to the size of a structure were not sufficient to patentably distinguish over the prior art.); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976) (mere scaling of the prior art would not establish patentability in a claim; 531 F.2d at 1053, 189 USPQ at 148.).

In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

In *re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (The court held that the Configuration of the claimed device was a matter of choice, which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed device was significant.).

One having ordinary skill in the art, in light of the above-cited case law, would conclude that that simply altering and claiming the dimensions of a known structure (wing and flap combination) for use in a substantially similar manner would be an obvious modification of this structure (wing flap combination).

8. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips (6,970,773) in view of Munoz Saiz (6,109,567) as applied to claim 1 above, and further in view of Miller et al (6,764,047). Neither Phillips nor Munoz Saiz disclose a filler between the flap and the wing. Miller et al however teaches that it is known to use flexible string hinges to couple between the flap and wing that effectively "seal off" (at

Art Unit: 3644

least partially) the opening between the flap and the wing. It would have been obvious to one having ordinary skill in the art, at the time the invention was made to use the hinges of Miller et al in the flap and wing combination of Phillips for the purpose of decreasing overall aircraft weight.

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).

- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Content of Specification

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.
- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).
- (e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.

Or alternatively, Reference to a "Microfiche Appendix": See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.
- (f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
 - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject

Art Unit: 3644

matter of the claimed invention. This item may also be titled "Technical Field."

- (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.
- (h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.
- (j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation.

Art Unit: 3644

There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).

- (k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).
- (l) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

Notes to Applicant

9. It appears that applicant is unfamiliar with the procedure for using status identifiers. When the applicant does not elect a specific claim, or at least identifies claims as non-elected, the applicant should label the claim as “withdrawn” and not as “original”. The examiner has waived this minor requirement on this instance, however will not waive this requirement in the future. Should the applicant fail to use the proper status identifiers for office communications, the examiner will deem such a communication as “non-responsive”.

10. In claim 19 the applicant has attempted to employ 112 6th paragraph with the phrase “filling means”. The examiner cannot determine the scope of this claim, and requests that the applicant provide an inclusive list (as defined in the originally filed

disclosure) that defines what all is meant and encompassed by the phrase “filling means”.

Claim Rejections - 35 USC § 112

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

12. Claims 1, 3, 5, 7-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

c. The applicant has introduced a “second leading edge” prior to introducing a first leading edge. The claims are therefore confusing.

d. The examiner does not understand how the word “liable” fits into the claim. The examiner does not believe this is a proper verb and believes that it is confusing.

e. Claim 1, line 4: what is “defined according to the first span”? The claim needs to be amended to clarify this issue.

f. Claim 11: the phrase “from the said first lead edge” appears to have words missing and therefore the scope cannot be determined.

g. Claim 13: the phrase “according to the claim 12” appears to have words missing and therefore the scope cannot be determined.

h. Claim 15: the phrase “according to the claim 14” appears to have words missing and therefore the scope cannot be determined.

Art Unit: 3644

- i. Claim 17: the phrase "according to the claim 16" appears to have words missing and therefore the scope cannot be determined.
- j. Claim 18: what does "it" refer back to? How does an "opening cause a clearance"?
- k. Claim 20: what does "it" refer back to?

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen A. Holzen whose telephone number is 571-272-6903. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Teri Luu can be reached on 571-272-7045. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sah



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